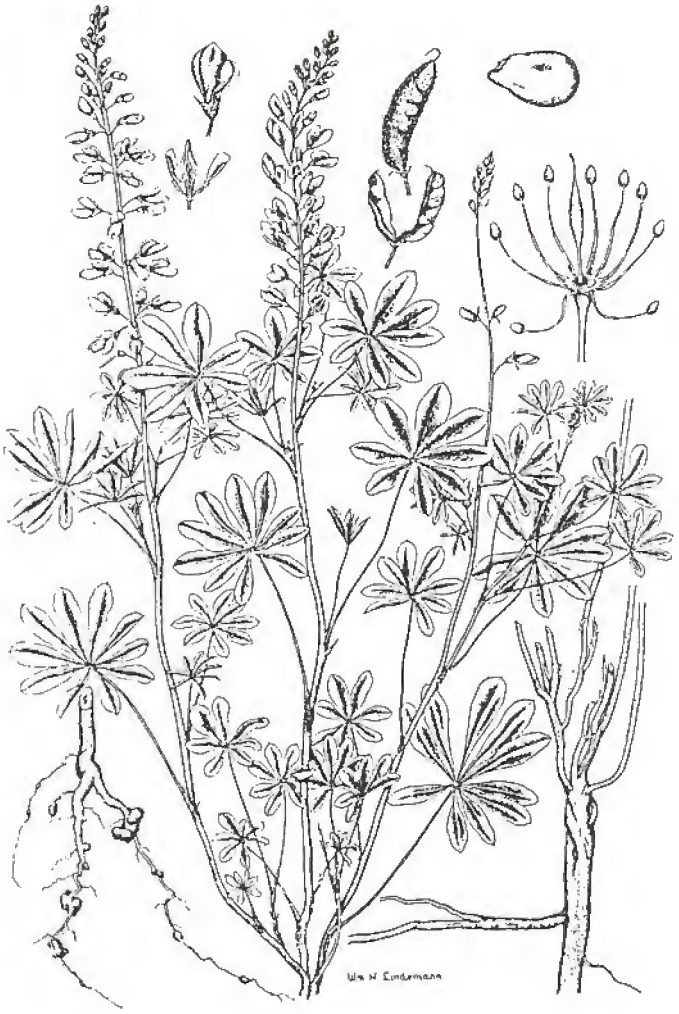
Castilleja

The Newsletter of the Wyoming Native Plant Society

March 1999
Volume 18, No. 1

In this issue:

WNPS News 2
Additions to the Flora of Wyoming VI 3
Thomas Nuttall: Botanist, Naturalist, and Personality in American History 4
The American Elm 6
Botany Briefs 7
Yermo in the News
Oldest Fossil Flower Discovered
Executive Order on Invasive Species
Prices Dropped on Flora ID Northwest Plant keys
Can Rust Fungi Become Extinct? 8



Silvery lupine (*Lupinus argenteus*) is one of the most common, wide-ranging, and morphologically variable plant species in Wyoming. Five varieties are recognized in the state, each differing in flower size, leaf pubescence, leaflet width, and habitat preference. Silvery lupine is thought to have greatly expanded its range in the intermountain west since the last ice age. Some authorities believe that the current taxonomic complexity of the species may be due to hybridization between formerly distinct taxa that lacked adequate reproductive barriers. Others contend that the progenitor of *L. argenteus* was a polymorphic species that is still in the process of genetic diversification as it encounters new, post-glacial environments. Silvery lupine is one of seven species of *Lupinus* found in Wyoming, many of which are poisonous to sheep. The word "lupine" comes from Latin for wolfish, a name mistakenly given the plants due to an ancient belief that lupines robbed the soil of nourishment. In reality, lupines enrich the soil with nitrogen fixed by symbiotic bacteria (*Rhizobium*) living in the plant's root nodules. Illustration by W.H. Lindemann from "Weeds of Wyoming" (1969).

WNPS NEWS

1999 Wyoming Rare Plant Conference: The Wyoming Rare Plant Technical Committee is sponsoring the fifth Wyoming Rare Plant Conference on March 16-18 in Rawlins, WY. The conference has been moved to the Days Inn at 2222 East Cedar St. to accommodate more participants. A group of 50 rooms are being reserved for conference attendees at a price of $40.80 for a single and $45.05 for a double room (call Tami Bustos at 1-888-324-6615 for reservations). All WNPS are invited to attend. The conference agenda includes the following speakers and topics:

Tuesday, 16 March

1:10 PM Tom Stohlgren: Protecting Plant Communities – A new look.
2PM Tom Andrews, USFS Region 2: The US Forest Service Research Natural Area program.
2:30 PM George Jones, WY Natural Diversity Database, Univ. of WY: Natural Area and Plant Community Protection in WY.
3:00 Break.
3:20 PM Greg Brown, Univ. of WY: What genetics can tell us about WY rare plants: lessons from *Descurainia torulosa* and *Gaura neomexicana* ssp. *coloradensis*.
3:50 PM Hollis Marriott, The Nature Conservancy: Rare plant communities of the Black Hills.
4:20 PM Jerry Freilich, The Nature Conservancy: Ecoregional planning in the Wyoming Basins.

Wednesday, 17 March

8 AM Sherel Goodrich, Ashley NF and Charmaine Delmatier, Western WY College: Rare plant communities and species of southwest Wyoming.
8:50 AM Steve Laster, Pinedale BLM: Ross Butte: more than just rare plants.
9:15 AM Andy Kratz, USFS Region 2: Bioprospecting on National Forest lands.
9:40 AM Teresa Prendusi, USFS Region 4: National Native Plant Conservation Initiative.
10:00 Break
10:20 AM Kent Houston, Shoshone NF: Developing a GIS/Ecological database on Shoshone National Forest.
10:50 AM Jennifer Whipple, Yellowstone NP: Rare plants and rare communities of Yellowstone National Park, WY.
11:15 AM Richard and Bev Scott, Central WY College: Demographic studies of desert yellowhead (*Yermo xanthocephalus*).
11:45 AM Lunch
1:00 PM Ron Hartman, Rocky Mountain Herbarium, Univ. of WY: New plant species in North America: a twenty-year survey.
1:20 PM Robert Dorn, Mountain West Env. Services: Our most endangered plants have yet to be found.
1:50 PM Walter Fertig, WY Natural Diversity Database, Univ. of WY: The protection status of rare plants in Wyoming: are species falling through the cracks?
2:15 PM Amy Roderick, Univ. of WY: A floristic survey of the North Platte Valley, WY.
2:40 PM Beth Ward, Univ. of WY: A floristic survey of the Washakie Basin and Rock Springs Uplift, WY.
3:05 Break
3:25 PM: Bruce Barnes, Flora ID Northwest, Computerized plant keys for Wyoming.
4:00 PM: Open discussion.

Thursday, 18 March

8:10 AM Larry Stritch, USFS, Washington DC: Rare plant conservation from a national perspective.
8:45 AM Walter Fertig, WY Natural Diversity Database, Univ. of WY: Overview of rare plant studies in WY, 1997-98.
9:30 AM Rare plant species review
10:00 AM Break
10:20 AM Rare plant species review
12.00 PM Conference adjourns

1999 Elections Coming Up: A slate of candidates for the WNPS Board will appear on the ballot/renewal notice in the May newsletter. If you would like to serve on the Board, or know someone who might like to run, please contact the Secretary before May 1.

1999 Annual Meeting/Field Trip Reminder: The Society's annual meeting and field trip is scheduled for the weekend of 19-20 June, 1999 in the desert country of Southwest Wyoming. Potential destinations include Flaming Gorge, the McKinnon area, and Fossil Butte National Monument. Look for a complete itinerary in the May issue of *Castilleja*.

A second weekend trip is planned for 31 July and 1 August 1999 in the Beartooth Range of northwestern Wyoming. This trip will include stops to the Lily Lake bogs, Clay Butte, and the Twin Lakes/Line Creek area on the Beartooth Plateau. A side trip to the Swamp Lake wetland in the Clarks Fork Valley is also planned. Stay tuned for complete details in the May newsletter.

New Members: Please welcome the following new members of WNPS: Ann Akey (Laramie), Drew Arnold (Laramie), Joy Handley (Laramie), Karen Hinman (Richland, WA), Leslie Marty (Bridger, MT), and Larry Morse (Arlington, VA).

Attention Readers: We are always looking for articles and illustrations for the newsletter. Items for the May issue are needed by 1 May 1999.

Treasurer's Report: Balance as of 28 February 1999: General Fund $434.84; 1998-99 Student Scholarship Fund $1075.00; Total funds: 1509.84 WF

Wyoming Native Plant Society
1604 Grand Ave., Laramie, WY 82070

President: Charmaine Delmatier (Green River)
Vice President: Jim Ozenberger (Jackson)
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Jennifer Whipple (Mammoth)
Newsletter Editor: Walt Fertig (307) 745-5026 (wk)/e-mail: clyde@uwyo.edu .

Teton Chapter: PO Box 82, Wilson, WY 83014 (Joan Lucas, Treasurer). For general information on events, call Katy Duffy (543-2959).

Contributors to this issue: Bruce Barnes (BB), John Baxter, Walter Fertig (WF), W.H. Lindemann, Stuart Markow, C.L. Porter, and John Randall (JR).

Additions to the Flora of Wyoming – VI.

By Walter Fertig

New plant species for the state continue to come to light, indicating that the study of the Wyoming flora is still far from complete. The newcomers (some of which are not so new!) include:

Eleocharis parvula (Small spikerush): This diminutive, perennial member of the sedge family (Cyperaceae) was discovered along a reservoir in Goshen County by Ernie Nelson, Tim Chumley and Robbin Romberg in 1994. Small spikerush can be recognized by its low stature (usually under 10 cm tall) and smooth, 3-sided achenes with a small, apical tubercle that is not strongly differentiated from the main body of the fruit. *E. parvula* was previously reported for Wyoming in the *Flora of the Great Plains* (1986), but no corroborating specimens were known from the Rocky Mountain Herbarium until Nelson made this collection.

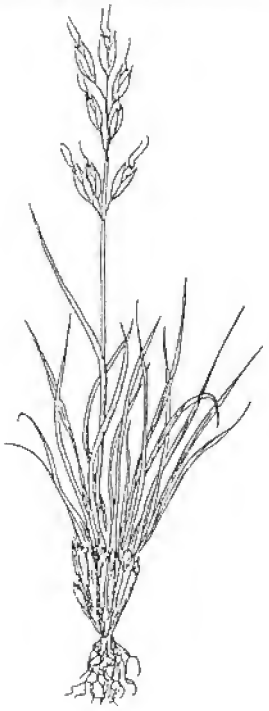
Epilobium oregonense (Oregon willow-herb): This low-growing member of the evening primrose family (Onagraceae) was first discovered in Wyoming in 1963, but remained unrecognized until willow-herb authority Peter Hoch annotated the specimen in 1978. Stuart Markow recently found another misidentified sheet belonging to this species among the collections of the Rocky Mountain Herbarium. Oregon willow-herb can be recognized by its glabrous herbage (at least below the inflorescence), sparsely leafy stems, thread-like, leafy, stolons, and finely papillate seeds. It can be confused with *E. glaberrimum*, a taller species with leafy, glaucous stems and short rhizomes. *E. oregonense* occurs in the Medicine Bow and southern Absaroka ranges in Albany and Fremont counties.

Helictotrichon mortonianum (Alpine oatgrass): George Jones discovered this perennial grass while conducting vegetation surveys on Arrow Mountain in the northeastern Wind River Range (Fremont County) in 1998. Alpine oatgrass differs from *Helictotrichon hookeri* in having a smaller stature, shorter panicle, inrolled rather than flat leaf blades, and fewer florets per spikelet. The species is a regional endemic of the southern Rocky Mountains, with the nearest known populations occurring in the Uinta Mountains of northeastern Utah.

Juncus articulatus (Jointed rush): Ernie Nelson, Tim Chumley, and Robbin Romberg discovered this species at three wetland sites in Platte County, WY in 1994. Jointed rush closely resembles *Juncus alpinoarticulatus* in having round, hollow leaves and short perianth segments (under 3 mm long), but can be distinguished by its sharp-pointed rather than round tepals and gradually-tapered fruiting capsule. *J. articulatus* occurs sporadically in the west, but is widespread in eastern North America and Eurasia. Some authors suggest that it may be introduced in many parts of its range.

Silene douglasii (Douglas' campion): This member of the carnation family (Caryophyllaceae) was discovered independently by Tom Cramer (1994) and George Jones (1998) on Raymond Creek along the Wyoming/Idaho border, but remained "unknown" until the specimens were properly identified by Stuart Markow and Ron Hartman in 1998. Douglas' campion typically occurs on rocky slopes and brushy draws from the montane to alpine zones through much of California, Nevada, Utah, and the Pacific Northwest. *Silene douglasii* superficially resembles *S. parryi*, but differs in having bilobed rather than 4-lobed petals. In Wyoming, the species is known only from western Lincoln County.

Below: *Helictotrichon mortonianum*. Ill. by W. Fertig from Scott's *Alpine Flora of the Rocky Mountains* (1997).



Thomas Nuttall: Botanist, Naturalist, and Personality in American History

By Stuart Markow

As I thumb through Dorn's *Vascular Plants of Wyoming*, I encounter names such as *Castilleja angustifolia* Nutt. and *Phlox longifolia* Nutt. From basic botany courses I know that "Nutt." is not a descriptive term ascribed to most botanists, but rather the author citation; that is the name (or abbreviation of the name) of the person (s) who first described the plant in the appropriate literature. Therefore, for each species terminated by "Nutt." we can deduce that this person, Thomas Nuttall, is the individual holding such distinction.

Today, botanists work feverishly to be the first to describe new species. Nuttall's accomplishments include well over a thousand such descriptions, hundreds of which are in manuals of our region. However, his works were not limited to plant collecting. He also collected and described birds, mammals, invertebrates and minerals. Finally, as if he had nothing else to do, he wrote prolifically about the natural world and about his adventures on the untamed American frontier.

The early 1800s saw the western U. S. just beginning to open up. It was also the beginning of intense scientific investigation, with particular interest in plant collecting. The desire to achieve immortality by being first to describe a species, the economic incentives to discover new crop plants, and even such mundane motives as the advancement of scientific knowledge all combined to generate an influx of collectors to the United States and, in particular, the American west with its unknown and untapped resources. It was this environment of exploration and discovery to which Thomas Nuttall arrived.

Like many of the early plant collectors, Nuttall was European. He was born in the village of Long Preston in Yorkshire, England – a locale which had been home to his ancestors for centuries. It is said that the people of this village were characterized by seriousness, independence, thoroughness and perseverance. These qualities certainly characterized Nuttall, just as they did the many other intrepid explorers of the new world.

Just how he acquired the resolve to explore the American frontier is open to speculation. One possibility lies with tales he heard about Thomas Simmonds who sallied forth to study the new world flora (and, unfortunately, met with an early demise in the process). Equally likely is the possibility that he was inspired by Francois Andre Michaux's writings about his travels and botanical exploits in America. Regardless, in March of 1808, after experiencing considerable friction with his uncle/employer, Nuttall left England for America, embarking on the adventures which would immortalize his name many times over.

After a dismal five weeks at sea, Nuttall arrived in Philadelphia where he quickly (that is, immediately upon leaving the ship) began indulging himself in the local flora. Naturally he was quite unfamiliar with it and was frustrated with his inability to find a floral manual to guide him. After attending to such basics as securing lodgings, he sought assistance from fellow boarders. These people advised him to see a Benjamin Smith Barton whom, they were vaguely aware, had written a botany textbook.

Above: Thomas Nuttall (from Graustein 1967).

A physician and professor of botany and natural history at the University of Pennsylvania, Barton was a legendary figure in his own right. As one of the preeminent botanists of the early years of America, it is only fitting that he help to launch Nuttall's career. Noting his enthusiasm and promising qualities, Barton did everything he could to encourage and instruct Nuttall. Within a year Barton was sending him on collecting trips throughout the northeast and to destinations in the southern Appalachians.

Barton had grandiose plans. Among others, his intentions were to 1) produce a systematic treatise of the flora of a large part of North America and 2) establish a greenhouse stocked with plants from across the country. These plans necessitated extensive collecting across the continent and, having demonstrated his enthusiasm and competence as a collector, Nuttall was the logical candidate for the job. Under the "Terms of Agreement" and "Directions for Mr. Thomas Nuttall" he was to travel from Philadelphia to what is now northern Saskatchewan, making collections and recording scientific information as he went.

It was a formidable undertaking, especially for one unschooled in the rigors of wilderness travel. Although he did carry a gun, there is no evidence that he had the slightest idea how to shoot it, apparently finding it most useful for digging plants.

Predictably, little of the excursion went as planned. Leaving Philadelphia in April, 1810, Nuttall eventually

reached the Mississippi River at Wisconsin, then departed from the established itinerary by proceeding downstream to St. Louis. Realizing the hopelessness of carrying out his assignment single-handed, he essentially abandoned it and joined a fur-trading expedition bound for the Columbia River. How far he actually got is not clear but reports suggest that he may have made it as far as the mouth of the Yellowstone. Along the way he took advantage of every opportunity to collect plants, seeds, roots and bulbs. Equally important was his careful observation and recording of scientific and historical information.

Late in 1811 Nuttall left his most westerly destination (whatever it was) and traveled back down the Mississippi to New Orleans. With considerable hostility against the British beginning to surface, Nuttall apparently decided it would be most prudent to postpone further activities in the U.S. In a final and quite decisive departure from his agreement with Barton, he left New Orleans on a ship conveniently bound for England. There he remained throughout the War of 1812. Before leaving, however, he did manage to send half of all his collections to Barton.

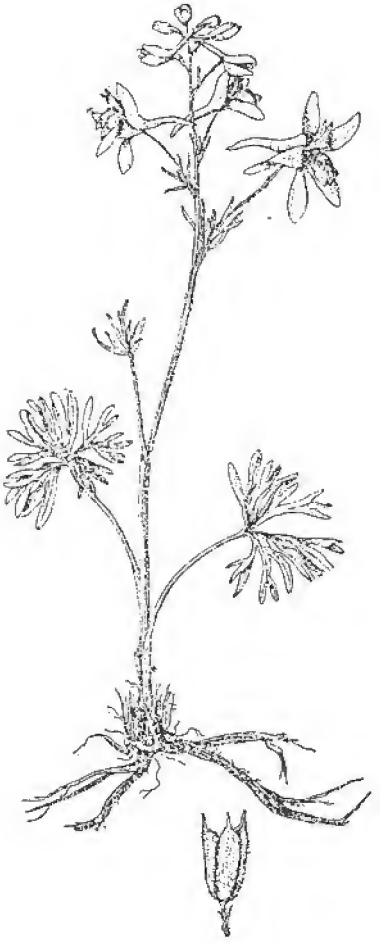
Nuttall's return in 1815 set the stage for further adventures and achievements. In 1818 he embarked on the second of his major trips, this time to what was then considered to be the southwest. Today we recognize this area as Arkansas and Oklahoma. His destination was the southern Rocky Mountains but bad weather, a lame pack horse, and illness which brought him to the brink of death forced a retreat. Nevertheless, this trip (which was of nearly one and a half years in duration) was productive in two ways: 1) he discovered hundreds of new plant species and 2) he finally came to the realization that he was incompetent to travel alone in the wilderness. Despite these gains, Nuttall was bitterly disappointed at not having reached the Rockies, and began to have serious doubts that he would ever do so.

It wasn't until 1834 that Nuttall realized his most cherished ambition. At the invitation of Nathaniel Jarius Wyeth, a fur trader and adventurer from Boston, he set out on a collecting expedition to the elusive Rocky Mountains and beyond. The accompanying party of 70 men and 250 horses was more than enough to offset Nuttall's woodsmanship deficiencies. Not only did he finally reach the Rocky Mountains, but also Oregon, California, the Pacific coast (where he collected 54 new species of shelled mollusks), and even Hawaii. Of particular interest is his 5 ½ months botanizing the Columbia River drainage, and his extensive collecting on the Snake River Plain. He returned from his journey two years after leaving and, in doing so, added over 1000 new species to the known American flora.

This was to be his final trip to western North America. He spent the next several years teaching, organizing his collections, publishing numerous scientific books and articles, and attending scientific conventions. Then in 1841 an old contract came back to haunt him; he was obliged to return to England to take over his uncle's estate. His botanical career in this half of the world was over.

So there, in a nuttshell, is a personality in early-American botany. It is a personality which has stood the test of time. Study of Nuttall's journals discloses more than just scientific treatment of an area. His writings are critical to understanding not only the natural science stores along his routes, but to understanding the American frontier in regions where there was little or no recorded history. While Nuttall's collections and publications are still considered to be among the most valuable contributions to North American botany, his journals are viewed as a gold mine of historical information. Few people have had such impact on the understanding of both our country's natural history and its cultural development. Few people will do so in the future.

Below: Little larkspur (*Delphinium bicolor*), a common, deep bluish-purple flowered western forb described by Thomas Nuttall from specimens collected on the Wyeth expedition in western Montana in 1834. Ill. from USDA Range Plant Handbook.



The American Elm

"...the most magnificent vegetable of the temperate zone"
Francois Andre Michaux

By Walter Fertig

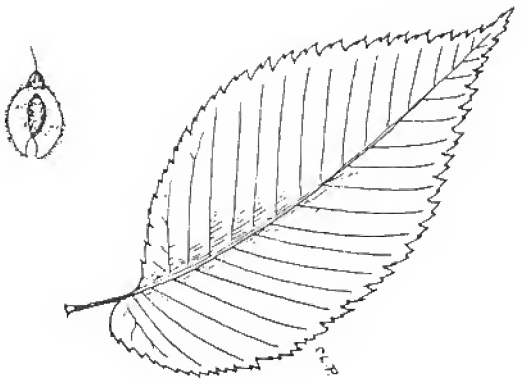
It is not often that an individual plant plays an important role in history, but such is the legacy of the "Liberty Tree". This enormous American elm once graced the Boston Common in colonial Massachusetts and served as a clandestine meeting place for Sam Adams and other patriots plotting rebellion against the monarchy. Early in the Revolutionary War the Liberty Tree became a martyr for the patriot cause when British troops felled and burned the tree. In recognition of its place in history, Massachusetts later adopted the American elm as its official state tree*.

Of course elms are noteworthy for many other reasons. The American elm (*Ulmus americana*) has long been one of the most popular ornamental trees in North America. The tree's fast growth rate, handsome vase-like growth form, immense size (often exceeding 100 feet in height), tolerance of poor soils, and ample foliage has made it one of the most commonly planted trees in city parks, college campuses, and along country lanes across the country. Even with the advent of Dutch elm disease, improved cultivars or introduced elm species are still widely planted.

For all its popularity as an ornamental, American elm is surprisingly poor as a lumber species. The wood of elm is extremely difficult to split, rots quickly when exposed to alternating periods of wetting and drying, and is prone to warping and twisting when dried. Its strong water retention and urine-like aroma also make it undesirable as firewood. Despite these drawbacks, elm wood was commonly used for construction of long bows, underground water pipes, and the bottoms of Windsor Chairs in Europe and 19th Century America.

Elms may be more important as a source of food, medicine, and shelter for humans and wildlife. Elm leaves and inner bark have been used as a source of cattle feed and emergency flour in Europe. Native Americans frequently prepared concoctions of American elm to treat diseases ranging from common colds to dysentery and gonorrhea, and even used an elm rinse to treat gunshot wounds. Songbirds, grouse, squirrels, rabbits, and deer feed on the fruits, twigs, buds, and leaves of elm and find shelter in the tree's branches and copious shade.

The American elm occurs throughout most of eastern North America, where it inhabits swamp forests, bottomlands, deciduous woodlands, and abandoned pastures. It reaches the western limit of its native range in the Black Hills of northeast Wyoming. Here, American elm is found primarily along low-elevation floodplains and ravines with bur oak, green ash, box-elder, and other deciduous trees and shrubs. Many of its associates are also at the far western edge of their range, although paleobotanical evidence suggests that these "eastern" species (or their close relatives) were widespread in the western United States prior to the Ice Age.



Above: American elm. Ill. by C.L. Porter.

Wyoming is also home to the Siberian elm (*Ulmus pumila*), an Asian species that has been widely introduced as a shade tree and natural wind break. Siberian elm is relatively disease resistant and cold tolerant and has been able to spread beyond cities and towns to inhabit a large area of Wyoming and the West. The two elms can be readily distinguished by their leaf and fruit characters. American elm has sandpapery-textured, double-toothed leaves with strongly unequal leaf bases and flat, winged fruit with "fuzzy" ciliate margins. By contrast, Siberian elm has singly-toothed leaf blades with equal bases and hairless fruits.

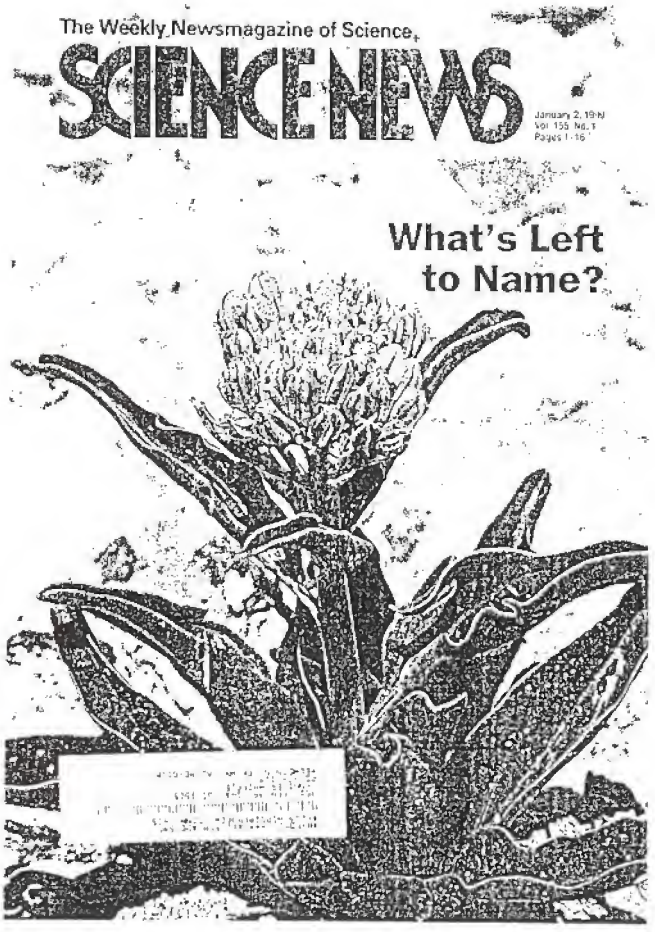
The American elm has declined throughout its range during the 20th Century due to the introduced fungal pathogen, *Ceratocystis ulmi*, commonly called Dutch elm disease (something of a misnomer, since the disease first appeared in France). Dutch elm disease attacks elms by invading the water and food-transporting tissues found just beneath the bark. With its conduit of nutrients blocked, the tree's leaves quickly fall, twigs and branches wilt, and in short time the entire tree dies. Infection is accomplished through the boring activity of two species of elm bark beetle (genus *Scolytus*). These beetles normally feed on healthy elms, but lay their eggs in diseased trees where they come into contact with the fungus. Adult beetles and their emerging larvae carry the fungi's sticky spores to other elm trees, allowing the disease to quickly spread through a forest.

In recent years, control of Dutch elm disease has become a three-pronged attack of sanitation, chemical treatment of beetles, and development of disease-resistant trees. Aggressive removal of diseased trees has been successful in keeping the rate of infestation of healthy trees low in many European countries. In the United States, dying trees are often treated with herbicides and synthetic sex hormones. Elm beetles find the hormones irresistible and are killed by the herbicide or, when unwilling to leave, through starvation. Development of new cultivars (often involving hybridization with Siberian or Chinese elms) and selection of naturally disease-resistant strains offer hope that the American elm will thrive again. It would be unfortunate indeed if the American elm follows the Liberty Tree into the pages of history.

* The American elm is also the state tree of North Dakota.

Botany Briefs

***Yermo* in the News:** The mainstream media rarely devotes much ink to botany, so it was a pleasant surprise when the January 2, 1999 issue of *Science News*, a weekly newsmagazine focussing on scientific discoveries, featured Wyoming's own Desert yellowhead (*Yermo xanthocephalus*) on its cover. The color close-up, taken by WNPS President Charmaine Delmatier, accompanied an article on the ongoing discovery of new plant species in the United States. This article in turn was prompted by the recent publication of "Taxonomic Novelties from North America North of Mexico: a 20 Year Vascular Plant Diversity Baseline" by Ron Hartman and Ernie Nelson of the Rocky Mountain Herbarium. In addition to featuring the work of Hartman and Nelson, the article also discussed noteworthy Wyoming discoveries by Robert Dorn and Erwin Evert. Congratulations to all for putting Wyoming botany in the national spotlight! WF



Oldest Fossil Flower Discovered: Plants also made the news this past November when Ge Sun, David Dilcher, Shaoling Zheng, and Zhekun Zhou announced the discovery of the world's oldest known fossilized flower in the cover story of the prestigious international journal *Science*. The specimen, named *Archaefructus liaoningensis,* was discovered 250 miles northeast of Beijing, China in 142 million year old limestone and ash beds dating from the Upper Jurassic. The fossil is a mere 3 inches long and consists of two spindly branches bearing numerous spirally-arranged leaf-like structures. These "leaves" are actually primitive carpels containing seeds and having a stigmatic crest for the interception of pollen. The entire branch is believed to represent a flower with an elongated axis of numerous carpels. No evidence of petals or stamens are present. *Archaefructus* predates the oldest previously known angiosperm fossils by about 13 million years and provides the first conclusive evidence that flowering plants evolved prior to the Lower Cretaceous. WF

Executive Order on Invasive Species: President Clinton signed an Executive Order on invasive species on February 2, 1999. The Order was publicly announced the next day at a press conference led by Agriculture Secretary Dan Glickman, Interior Secretary Bruce Babbitt, and NOAA Administrator James Baker. The Order directs federal agencies to use their authorities to prevent the introduction of invasive species and to restore native species. The Order also creates an Invasive Species Council that is charged to develop a comprehensive invasive species management plan within 18 months. The management plan is to seek ways to prevent new introductions, control invaders that are already present, and restore natives. The Council itself will be comprised of the Secretaries of State, Defense, Interior, Agriculture, and Commerce, but will be advised by a special committee established by the Interior Secretary. The special committee will include representatives from 'stakeholder' groups (possibly including conservation groups, ranchers, nurseries, etc.). The Council is also charged with facilitating establishment of an internet-based database network on invasive species.

Just two days before the Order was announced, President Clinton released his proposed FY 2000 budget which includes an increase of more than $28 million in funds to combat exotic pests and diseases and to accelerate research on habitat restoration and biologically-based integrated pest management methods. JR.

Prices dropped on Flora ID Northwest plant keys: Thanks to the response over the last four years, we have been able to recover our expenses, and have lowered the prices for computer plant keys by up to 60%. For price information and ordering, see www.ucinet.com/~floranw, or contact Bruce Barnes, 135 SE 1st, Pendleton, OR 97801, or flora@ ucinet.com. BB

The Wyoming Native Plant Society, established in 1981, is a non-profit organization dedicated to encouraging the appreciation and conservation of the native flora and plant communities of Wyoming. The Society promotes education and research on native plants of the state through its newsletter, field trips, and annual student scholarship award. Membership is open to individuals, families, or organizations with an interest in Wyoming's flora. Members receive *Castilleja*, the Society's quarterly newsletter, and may take part in all of the Society's programs and projects, including the annual meeting/field trip held each summer. Dues are $5 annually.

To join the Wyoming Native Plant Society, return the membership form below to:

Wyoming Native Plant Society
1604 Grand Ave.
Laramie, WY 82070

Wyoming Native Plant Society

Name:

_____

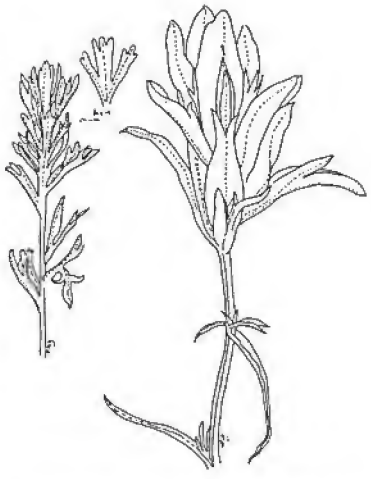
Address:

_____

_____

___ $5.00 Regular Membership

___ $15.00 Scholarship Supporting Member
($10.00 goes to the annual scholarship fund)



Wyoming Native Plant Society
1604 Grand Ave.
Laramie, WY 82070

Can Rust Fungi Become Extinct?

By John Baxter

When we consider that by the year 2020 the prairie dog and meadowlark will exist only in our memories, it seems possible that a rust fungus could become extinct. Two possibilities are *Ravenelia opaca*, collected only once in 1910, and *Uromyces oblongisporus*, known from a single specimen found in the early 1900s (in Wyoming, by the way).

The problem of extinction of rusts has been studied intensively by world-famous rustologist John Baxter of Ashland, Oregon, who has formulated what is known as Baxter's Law of the Extinction of Rusts:

> "Many a rust that was once picked out of the pasture has now passed out of the picture"